Appl. No. 09/993,727 Amdt. Dated February 14, 2005 Reply to Office action of October 13, 2004

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

Claim 1 (currently amended): A driving assistance apparatus 1 for displaying and guiding a peripheral condition of a vehicle 2 in an easily understanding manner, comprising: 3 4 a camera mounted on a peripheral portion of the vehicle; an virtual observing point converting unit which converts 5 an image picked up by the camera into an image viewed from a 6 7 virtual observing point; [[a]] an image synthesizing unit which synthesizes the images viewed from a virtual observing point to display a 9 peripheral condition of the vehicle; 10 an obstacle sensing unit which senses presence of an 11 obstacle and which measures at least one of a distance from the 12 13 own vehicle up to an obstacle and a direction of the obstacle; 14 and a safety area predicting unit which predicts a safety area 15 of the peripheral portion of the own vehicle, in which the 16 obstacle is not present, based upon the information acquired by 17 the obstacle sensing unit. 18

- 1 Claim 2 (original): The driving assistance apparatus as 2 claimed in claim 1, further comprising:
- a safety area superposing unit which superposes the safety

 area on the image synthesized by the image synthesizing unit for

- 5 display the superposed area.
- Claim 3 (currently amended): A driving assistance apparatus
- for displaying and guiding a peripheral condition of a vehicle
- in an easily understanding manner, comprising:
- a camera mounted on a peripheral portion of the vehicle;
- a virtual observing point converting unit which converts an
- 6 image picked up by the camera into an image viewed from a virtual
- 7 observing point;
- 8 [[a]] <u>an</u> image synthesizing unit which synthesizes the
- 9 images viewed from a virtual observing point to display a
- 10 peripheral condition of the vehicle;
- an obstacle sensing unit which senses presence of an
- 12 obstacle and which measures at least one of a distance from the
- own vehicle up to an obstacle and a direction of the obstacle;
- 14 and
- an obstacle area predicting unit for predicting an obstacle
- 16 area; and
- an obstacle area superposing unit which superposes the
- obstacle area on the image synthesized by the image synthesizing
- 19 unit for display the superposed area.
- 1 Claim 4 (currently amended): The driving assistance
- 2 apparatus as claimed in claim 1, A driving assistance apparatus
- 3 for displaying and quiding a peripheral condition of a vehicle
- in an easily understanding manner, comprising:
- a camera mounted on a peripheral portion of the vehicle;
- an virtual observing point converting unit which converts

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- an image picked up by the camera into an image viewed from a virtual observing point; 8 an image synthesizing unit which synthesizes the images 9 viewed from a virtual observing point to display a peripheral 10 condition of the vehicle; 11 an obstacle sensing unit which senses presence of an 12 obstacle and which measures at least one of a distance from the 13 own vehicle up to an obstacle and a direction of the obstacle; 14 15 and a safety area predicting unit which predicts a safety area 16 of the peripheral portion of the own vehicle, in which the 17 obstacle is not present, based upon the information acquired by 18 19 the obstacle sensing unit; 20 wherein the obstacle sensing unit corresponds includes a distance measuring sensor capable of measuring a distance from 21 the own sensor up to the obstacle, and outputs the shortest 22 distance from the own vehicle among the detected obstacles as the 23 24 distance up to the obstacle, wherein the safety area predicting unit predicts a safety 25 area corresponding to an area is detectable by the distance 26 measuring sensor and the area is located within one of a sphere 27 and a circle where the distance up to the obstacle is defined as 28
- Claim 5 (currently amended): The driving assistance

 apparatus as claimed in claim 3, A driving assistance apparatus

 for displaying and quiding a peripheral condition of a vehicle

sensor is used as a center of the sphere or the circle.

a radius, while a mounting position of the distance measuring

4	in an easily understanding manner, comprising:
5	a camera mounted on a peripheral portion of the vehicle;
6	an virtual observing point converting unit which converts
7	an image picked up by the camera into an image viewed from a
8	virtual observing point;
9	an image synthesizing unit which synthesizes the images
10	viewed from a virtual observing point to display a peripheral
11	condition of the vehicle;
12	a first obstacle sensing unit for measuring a distance from
13	the own vehicle up to an obstacle and a direction of the
14	obstacle, and also for sensing presence of the obstacle by way
15	of a sensor;
16	a second obstacle sensing unit which senses presence of an
17	obstacle and which measures at least one of a distance from the
18	own vehicle up to an obstacle and a direction of the obstacle;
19	an obstacle area predicting unit for predicting an obstacle
20	area; and
21	an obstacle area superposing unit which superposes the
22	obstacle area on the image synthesized by the image synthesizing
23	unit for display the superposed area;
24	wherein the first and second obstacle sensing unit includes
25	units include an ultrasonic-wave sensor capable of measuring a
26	distance from the own sensor up to the obstacle, and outputs the
27	shortest distance from the own vehicle among the detected
28	obstacles as the distance up to the obstacle; and
29	wherein the obstacle area predicting unit predicts an area
30	where an obstacle is present, that corresponds to an area
31	detectable by the ultrasonic-wave sensor, and the area located

virtual observing point;

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- outside one of a sphere and a circle where the distance up to the
 obstacle is defined as a radius, while a mounting position of the
 ultrasonic-wave sensor is used as a center of the sphere or
 circle.
- Claim 6 (currently amended): The driving assistance

 apparatus as claimed in claim 3, A driving assistance apparatus

 for displaying and guiding a peripheral condition of a vehicle

 in an easily understanding manner, comprising:

 a camera mounted on a peripheral portion of the vehicle;

 an virtual observing point converting unit which converts

 an image picked up by the camera into an image viewed from a
- 9 <u>an image synthesizing unit which synthesizes the images</u>
 10 <u>viewed from a virtual observing point to display a peripheral</u>
 11 <u>condition of the vehicle;</u>
- a first obstacle sensing unit for measuring a distance from

 the own vehicle up to an obstacle and a direction of the

 obstacle, and also for sensing presence of the obstacle by way

 of a sensor;
 - a second obstacle sensing unit which senses presence of an obstacle and which measures at least one of a distance from the own vehicle up to an obstacle and a direction of the obstacle;
- an obstacle area predicting unit for predicting an obstacle
 area; and
- an obstacle area superposing unit which superposes the

 obstacle area on the image synthesized by the image synthesizing

 unit for display the superposed area;

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obstacle.

wherein the <u>first and second</u> obstacle sensing <u>unit includes</u>

<u>units include</u> one of an ultrasonic-wave sensor having a plurality

of ultrasonic-wave oscillating sources and an ultrasonic-wave

sensor capable of varying a direction of the scanning operation,

wherein the obstacle area predicting unit grasps a

substantially shape of the obstacle which is faced to a side of

the own vehicle based upon the information derived from the <u>first</u>

and <u>second</u> obstacle sensing <u>unit units</u>, and predicts the area

where the obstacle is present, which involving a dimension of the

Claim 7 (original): The driving assistance apparatus as claimed in claim 2, wherein the safety area superposing unit superposes the safety area predicted by the safety area predicting unit on the image synthesized by the image synthesizing unit in at least one of a flickering display manner, a half-tone dot meshing display manner, and a transparent color display manner.

Claim 8 (original): The driving assistance apparatus as claimed in claim 3, wherein the obstacle area superposing unit superposes the obstacle area predicted by the obstacle area predicting unit on the image synthesized by the image synthesizing unit in at least one of a flickering display manner, a half-tone dot meshing display manner, and transparent color display manner.